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Primary obstructive megaureter with a giant lower ureteral stone synchronous with ipsilateral staghorn kidney

Mohammad Kazem Moslemi*

Department of Urology, Kamkar Hospital, School of Medicine, Qom University of Medical Sciences, Qom 3715694978, Iran

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ABSTRACT

INTRODUCTION: Primary obstructive megaureter (POM) is uncommon in adults. Urolithiasis formation may uncover the underlying congenital abnormally of these patients.
PRESENTATION OF CASE: Herein, we present a 20-year-old man who was admitted with synchronous left renal staghorn and a lower giant ureteral stone. Radiologic evaluations revealed that POM is the underlying cause of the uncommon occurrence of synchronous left reno-ureteral stone formation.
DISCUSSION: Urinary tract stones are not uncommon in the POM. Although synchronous renal-ureteral unit stones are less common but staghorn-ureteral stones complex are very rare. In such conditions full radiologic work-up is recommended. Based on our literature review, this is the first reported case of staghorn-ureteral stones complex in the setting of adult POM.
CONCLUSION: In every case with dilated ureter concomitant with ureteral stone or renal stone, the POM should be included in the differential diagnosis.

1. Case report

The patient was a 20-year-old Iranian man who was presented with chronic left loin pain since one year before admission. He complained from dysuria, frequency and urine discoloration as well. In the physical examination, no characteristic abnormality was found. The patient's body mass index (BMI) was 20. No associated congenital anomalies were found. In the urinalysis only micro-hematuria with sterile pyuria was detected. Urine culture was negative. Serum biochemistry was unremarkable. In the abdominopelvic ultrasonography, a left renal staghorn with a large lower ureteral stone that
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left hydroureter with stones in the kidney and lower ureter were found (Figs. 1 and 2). The diagnosis of POM was made by IVP that revealed bilateral functional kidneys with dilated left ureter with a narrow tapering lower ureter (Fig. 2). Voiding cystourethrography (VCUG) was negative for vesicoureteral reflux (VUR) and infravesical obstruction. In the cystourethroscopy, the left ureteral orifice was edematous and no ureteroscopy or ureteral catheterization was possible. The patient underwent two sessions operation; left ureterolithotomy via retroperitoneal Gibson incision accompanied by excision of 2 cm of obstructive part of lower ureter and ureteroneocystostomy (UNC) with ureteral tailoring as the first operation followed by extended left pyelolithotomy with lumbotomy incision in the second operation. The excised ureteral part was sent to the pathology for definite diagnosis. The UNC was performed with the modified Lich technique. A giant ureteral stone measuring 7 cm × 1.5 cm in the longest diameter (Fig. 3) was removed in the first operation. Postoperatively, the patient was good with no remarkable events. The pathology report was in accordance with obstructive megaureter due to absence of smooth muscle development. The follow up IVP, six months later was unremarkable (Fig. 4).

2. Discussions

by Caulk.[1] It is common in children but its presentation as a primary anomaly is rare in adults as evidenced by a 12-year observation. This observation which was performed for over 24,000 new adult genito-urinary cases showed that only 11 patients were diagnosed with this condition.[2] It occurs due to an intrinsic congenital obstruction at the distal 1–2 cm part of the ureter just before its entrance to the bladder.[3] The proximal ureteral part is dilated. They may be asymptomatic or present with flank pain, recurrent urinary tract infection (UTI), and hematuria in the symptomatic situations. Pain is the most common presenting symptom.[2] In mild cases, there is a 2–3 cm fusiform lower ureteral dilation just proximal to the tapered extravesical distal segment.[4] With increasing severity, the ureter dilates more proximally and involves the collecting system. In extreme cases, there is significant hydronephrosis, and loss of the renal parenchyma leading to the impaired renal function. The characteristic criteria for the diagnosis of POM are; absence of vesicoureteral reflux (VUR), absence of obstruction in the

* Fax: +98 251 7836646; mobile: +98 9122521646.
E-mail address: mkmoslemi@gmail.com

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Fig. 1. Plain abdominal X-ray showing a semi-opaque left renal shadow consistent with staghorn and a lower ureteral stone.

infra-vesical area, and absence of secondary causes of lower ureteral obstruction.[5,6] The adult presentation of POM is in the third or fourth decades of life, and unilateral involvement is more common than bilateral disease. The condition is usually seen in the left side with the male predominance.[7,8] In a large reported series of 55 adults with symptomatic POM, Hemal et al. identified 20 patients

Fig. 3. Ureteral stone which removed with operation.

(36%) to have urinary tract stones.[3] The rate of synchronous renal–ureteral unit stones was 5.5%.[3] Associated anomalies can be found with POM such as ureteropelvic junction obstruction (UPJO), horseshoe kidney, megacalicosis, megalourethra, megacystis, and contralateral renal atrophy. From these anomalies, contralateral renal atrophy was the most common, and was found in 9% of cases.[3] Most of the stones were located in the ureter; only 3 of the 55 patients (5%) had isolated renal calculi. Large stones can develop in the dilated portion of the ureter due to urinary stasis. Delakas et al.[9] described an adult patient with POM who developed a 12 cm isolated ureteral stone within the dilated portion of involved ureter.

Fig. 2. Preoperative IVP demonstrating left megaureter with ipsilateral hydronephrotic kidney.

Fig. 4. Follow-up IVP, 6 months after operation showing bilateral simultaneous secretion of both kidneys. The reimplanted left ureter is non-obstructive.

Our case had a 7 cm ureteral stone that accompanied with an ipsilateral staghorn.

Eswl, ureteroscopy, ureteral meatotomy and stenting, and percutaneous nephrostomy are non-invasive or less invasive techniques that sometimes were needed in the management of POM or POM related stones.[3]

There are some reports about the formation of giant ureteral stones in adults in association with urinary tuberculosis,[10] ureteroceles,[11] and prolapsed benign polyp of the ureter.[12] Rosenblatt et al.[13] reported two cases of adult POM that presented with urolithiasis. Due to small stone sizes, they just treated the stones without surgical repair of the underlying megaureter. It is expected that leaving the underlying abnormality intact may pose the patient to the recurrent stone formation and persistence of symptoms.

3. Conclusions

Due to giant size of ureteral stone in our case we repaired the obstructed megaureter synchronous with the stone removal. Based on the best of our knowledge, this is the first reported case in the literature in which a huge ureteral stone with synchronous ipsilateral staghorn formed on the basis of primary obstructive megaureter (POM).

Conflict of interest

None.

Funding

None.

Ethical approval

We have obtained written consent from the patient and we can provide this information upon editor request.

Author contributions

Mohammad Kazem Moslemi is the single author of the manuscript and all the work was done by him totally.

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